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Survey study of the Gooding, Idaho school district

Abstract

Background: The purpose of this survey was to assess the knowledge of rural schoolteachers with respect to vision, ocular conditions, and other visual-related aspects of the classroom. The educational level of the respondents was also attained.

Methods: A series of two surveys was handed out at the four schools in Gooding, Idaho to ascertain education level and familiarity with vision or ocular terms that related to the classroom. In Gooding, there is a grade school, middle school, high school, and alternative school. The survey was handed to each teacher and completion was voluntary and anonymous. Of approximately 80 teachers, 39 responded to the first survey and 41 responded to the second. The survey data was compiled for graphs and conclusions.

Results: The education level of teachers in the Gooding School District is approximately 34% BA, 43% BS, and 24% Masters. Many of the teachers were familiar with myopia, astigmatism, and ocular anatomy. Few were familiar with other refractive errors, binocular vision, accommodation, and treatments for visual problems. The majority had no college and CE training about vision in the classroom. Few had basic training from a college course, textbook, or CE. Approximately half of the respondents were interested in learning more about vision in the classroom, a third showed some interest, and the remaining showed no interest.

Conclusions: Though this is not a large-scale survey, the results show a trend for the average educator in rural Idaho. This information may also be applied to the average person or parent since most of the respondents had little or no training about vision. The survey shows a definite need for teacher education with regards to vision and its effects in the classroom. Teachers are in a unique position to observe students and recognize vision problems. With the appropriate treatment, most vision problems can be corrected and a student's academic performance enhanced.

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Master of Science in Vision Science

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Anita McClain

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Survey Study of the Gooding, Idaho School District

PRESENTED BY:

Raymond C. Goodman

In partial fulfillment for the Master of Education
Visual Function in Learning
At Pacific University

April 2002

Committee Member:

A handwritten signature in cursive script, reading 'Anita McClain', is written over a horizontal line.

Dr. Anita McClain
Coordinator, M.Ed. VFL Program

Biography

Raymond Clyde Goodman

Raymond was born June 6, 1975 in Twin Falls, Idaho. He grew up in Gooding, Idaho, and graduated from Gooding High School in 1993. He then attended Ricks College, Boise State University, and Pacific University, receiving a Bachelor of Science from Pacific University. On June 21, 1997, Raymond was married to Lori Irwin from British Columbia, Canada. They have three children, Michael Ryan born July 22, 1998, Natalie Mae born August 16, 2000, and Abigael Marie born March 4, 2002.

Upon graduation and licensure Raymond plans to become an associate at a private optometric practice in Gooding, ID that will later lead to ownership. He looks forward to practicing in his hometown and raising his children there. Raymond also plans to work in cooperation with the local school districts to educate teachers and treat students who need help overcoming educational obstacles to be successful in school.

Abstract

Background

The purpose of this survey was to assess the knowledge of rural schoolteachers with respect to vision, ocular conditions, and other visual-related aspects of the classroom. The educational level of the respondents was also attained.

Methods

A series of two surveys was handed out at the four schools in Gooding, Idaho to ascertain education level and familiarity with vision or ocular terms that related to the classroom. In Gooding, there is a grade school, middle school, high school, and alternative school. The survey was handed to each teacher and completion was voluntary and anonymous. Of approximately 80 teachers, 39 responded to the first survey and 41 responded to the second. The survey data was compiled for graphs and conclusions.

Results

The education level of teachers in the Gooding School District is approximately 34% BA, 43% BS, and 24% Masters. Many of the teachers

were familiar with myopia, astigmatism, and ocular anatomy. Few were familiar with other refractive errors, binocular vision, accommodation, and treatments for visual problems. The majority had no college and CE training about vision in the classroom. Few had basic training from a college course, textbook, or CE. Approximately half of the respondents were interested in learning more about vision in the classroom, a third showed some interest, and the remaining showed no interest.

Conclusions

Though this is not a large-scale survey, the results show a trend for the average educator in rural Idaho. This information may also be applied to the average person or parent since most of the respondents had little or no training about vision. The survey shows a definite need for teacher education with regards to vision and its effects in the classroom. Teachers are in a unique position to observe students and recognize vision problems. With the appropriate treatment, most vision problems can be corrected and a student's academic performance enhanced.

Acknowledgments

Dr. Anita McClain, for editing assistance and supervising the project.

Gooding School District Teachers and Educator, for providing the data utilized in the survey.

Lori, Michael, Natalie, and Abigael Goodman for moral support and inspiration.

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John, Crystal, Gina, and Leisa, my siblings, for the beneficial impact they have had on my life.

Table of Contents

Introduction.....	1
Methods.....	6
Results.....	7
Implications.....	15
Conclusions.....	17
Appendix A	
Survey one and two	18
Appendix B	
Glossary of terms used in survey two.....	22
Bibliography.....	24

Introduction

The purpose of this survey was to assess the knowledge of rural schoolteachers with respect to vision, ocular conditions, and other visual-related aspects of the classroom. Specifically, the Gooding School District is of notable interest because the author will be the only optometrist in the county.

The information attained will be used to inform the author and other optometrists about the general level of optometric or visual knowledge acquired by educators in their schooling.

Vision is critical to the learning process since the visual processing of information accounts for eighty-percent ¹ of learning. The basic skills a student needs for school are: good near and distance acuity (the ability to see clearly near and far), binocular coordination ² (the ability to use both eyes together), eye movement skills (the ability to aim the eyes accurately, move them smoothly, and shift the eyes from one object to the other), focusing skills (the ability to focus the eyes at the proper distance and to change focus quickly), peripheral awareness (the ability to be aware of objects located to the side while looking straight ahead), and visual-motor integration ³ or hand-eye coordination (the ability to use the hands and eyes together as a team). ⁴

If any of these abilities are deficient or absent, a student may have a difficult time learning in the classroom. This difficulty can be manifest as losing their place when reading, avoidance of close work, holding reading material closer than normal, rubbing their eyes, headaches, turning or tilting the head to use only one eye, frequent reversals when reading or writing, using the fingers to maintain their place when reading, omitting or confusing small words when reading, and consistently performing below potential.⁴ When a student consistently performs below potential, he may be wrongly labeled as learning disabled. Vision problems and learning disabilities have similar symptoms as defined by the National Center for Learning Disabilities - learning disabilities are neurological disorders that interfere with a person's ability to store, process, or produce information, and create a "gap" between one's ability and performance. Individuals with learning disabilities are generally of average or above average intelligence.⁵

There are many visual conditions that can hamper a student's ability to learn such as astigmatism and hyperopia⁶, strabismus and binocular instability⁸, visual discrimination dysfunction and dyseidetic dyslexia.⁷ Refractive errors (myopia, hyperopia, and astigmatism) can be treated with glasses or contact lenses. Binocular problems can be treated with spectacle correction, vision therapy, strabismus surgery, or a combination of these treatments based on recommendations of an eyecare professional. A small

number of visual conditions have no cure. Disease, trauma, or congenital birth defects usually cause these. In these cases, a student can be instructed in coping mechanisms to help them function at their best. Coping mechanism may include tutoring, computer programs, low-vision devices (like a magnifying glass), or Braille instruction.

Most visual conditions that cause students to have problems learning have obvious signs that can be recognized by parents and teachers. When the visual system doesn't function properly, a student may rub his eyes, forget what he reads, avoid near tasks, see double, have headaches, squint, or cover an eye, just to name a few.⁹⁻¹¹

As reported by the American Foundation for Visual Awareness, vision disorders are the fourth most common disability in the United States and the most prevalent handicapping condition in childhood.¹² A recent report by the National Eye Institute states that "in children, visual impairment is associated with developmental delays and the need for special educational, vocational, and social services, often beyond childhood into adulthood."¹³ A conservative interpretation of research indicates that at least 10%-15% of children are at risk from undetected vision impairments. Viewing this number in the context of US Census data means that as many as 8 to 12 million school age children are at risk from undetected vision impairments.

School screenings are designed to identify students who may need further examination, though many even fall short of that.¹ Vision screenings in schools and medical doctors offices that measure only visual acuity detect only thirty percent of children that would fail a professional exam.¹ A screening is no substitute for a comprehensive visual exam by a qualified optometrist. Even though a student has passed a school screening, teachers should continue to watch for signs of visual problems as listed earlier in this paper.

After reviewing several college textbooks for teachers, it appears they receive very little training about vision. The majority of these books came from the curriculum material at Pacific University for Elementary, Middle School, and High School Education. The key words eyes, sight, and vision were searched in the indices of the books and the results are as follows.

Reading and Learning to Read¹⁴

p. 20 - One figure referencing a book on visual information processing

Those Who Can Teach¹⁵

No references

Teaching Strategies A Guide to better Instruction¹⁶

p. 146 table 4.3 – part of a table about multiple intelligences, visual-spatial intelligence

Science Instruction in the Middle and Secondary School¹⁷

p. 49-50 Section on teaching students with visual impairments

p. 79-80 Eye Protection with science experiments

Behavioral Management Applications for Teachers¹⁸

p. 505 – paragraph on eye contacts and culture

Teaching Students with Learning Problems¹⁹

P536 table 13.1 – part of a table about learning strategies, visual imagery strategy

Remediating Reading Difficulties ²⁰

p. 11 – paragraph on visual discrimination

p. 13 – paragraph on visual-motor skills

p. 87 – sentence on visual defects

An optometrist, who is interested in learning and children, can teach the signs of visual problems to teachers in continuing education seminars and other presentations. There are many pamphlets designed for teachers such as: The Effects of Vision on Learning and School Performance (Oregon Optometric Physicians Association), I was nearly a Dropout, Learning Lenses in the Beginning School Grades, Vision in the Classroom, and Educator's Guide to Classroom Vision Problems (Optometric Extension Program), and A Teacher's Guide to Vision Problems (American Optometric Association) ⁹⁻¹¹. There are also organizations, like the American Academy of Optometry, the College of Vision Development, and the Optometric Extension Program that provide information specifically for teachers. The author plans to provide continuing education for the teachers in his local area using the information from this survey as a guide, and one day write a small book to help educators better understand the role of vision in learning.

Methods

The Gooding school district was a natural choice for this survey series since the author will be living and practicing there for many years to come. Gooding has four schools: a grade school, middle school, high school, and alternative school. The majority of teachers and administrators were familiar with the author.

Permission was acquired through Gooding's superintendent and he supported the project. Next, a series of two surveys was handed out at the four schools in Gooding, Idaho. The first survey ascertained the education level of the educators and their interest in learning about vision in the classroom. The second survey inquired about the familiarity with vision or ocular terms that related to the classroom.

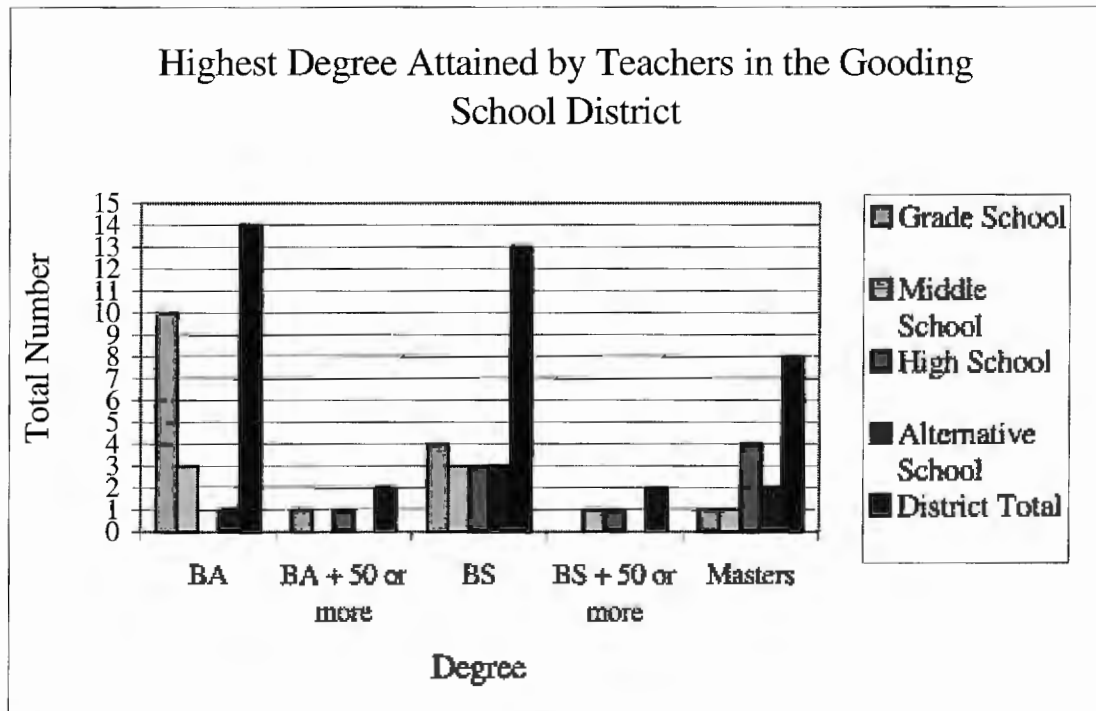
Each survey was given to teachers in the four schools and completion was voluntary and anonymous. Of approximately 80 teachers, 39 responded to the first survey and 41 responded to the second. The survey data was compiled for graphs and conclusions. A copy of each survey is included in **Appendix A.**

Results

Education

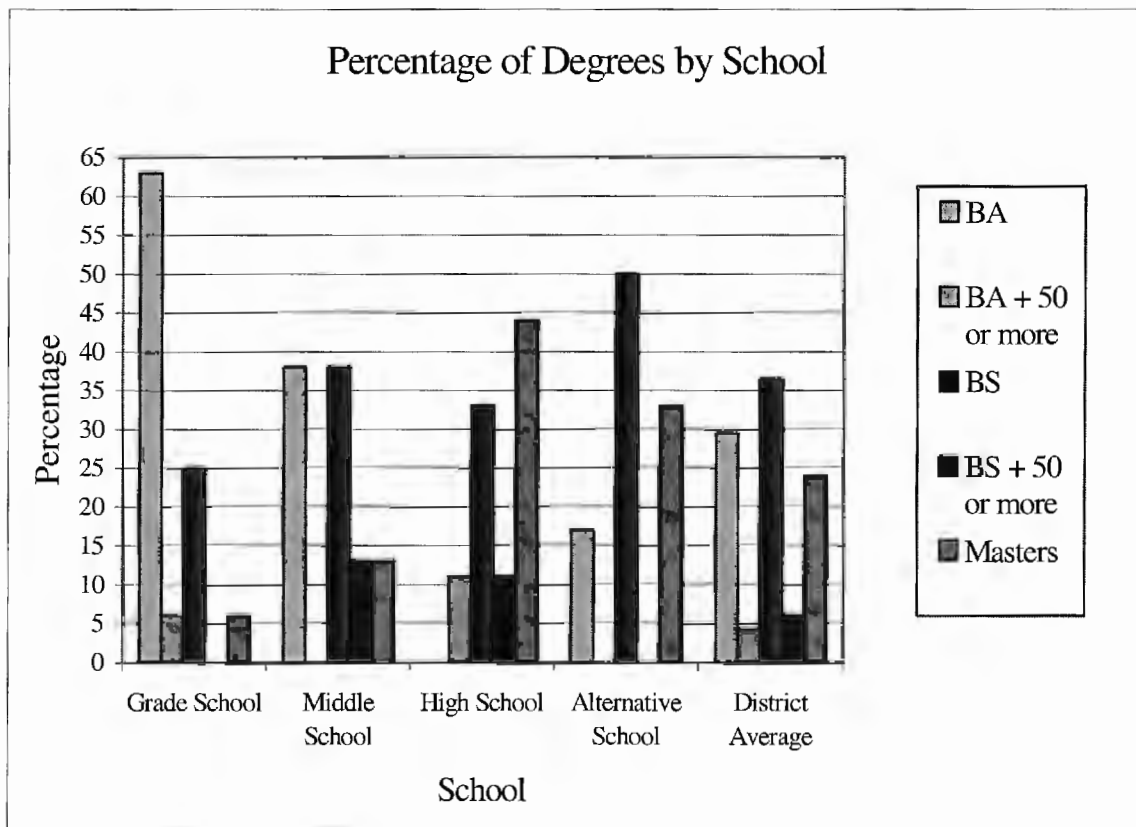
The highest education level attained by teachers in the Gooding School District is approximately 34% BA, 43% BS, and 24% Masters.

NUMBER	Grade School	Middle School	High School	Alternative School	District Total
BA	10	3	0	1	14
BA + 50 or more	1	0	1	0	2
BS	4	3	3	3	13
BS + 50 or more	0	1	1	0	2
Masters	1	1	4	2	8
Total	16	8	9	6	39



The elementary school teachers showed a tendency toward BA degrees with a fairly even spread of degrees through the other schools.

PERCENTAGE	Grade School	Middle School	High School	Alternative School	District Average
BA	63	38	0	17	30
BA + 50 or more	6	0	11	0	4
BS	25	38	33	50	37
BS + 50 or more	0	13	11	0	6
Masters	6	13	44	33	24

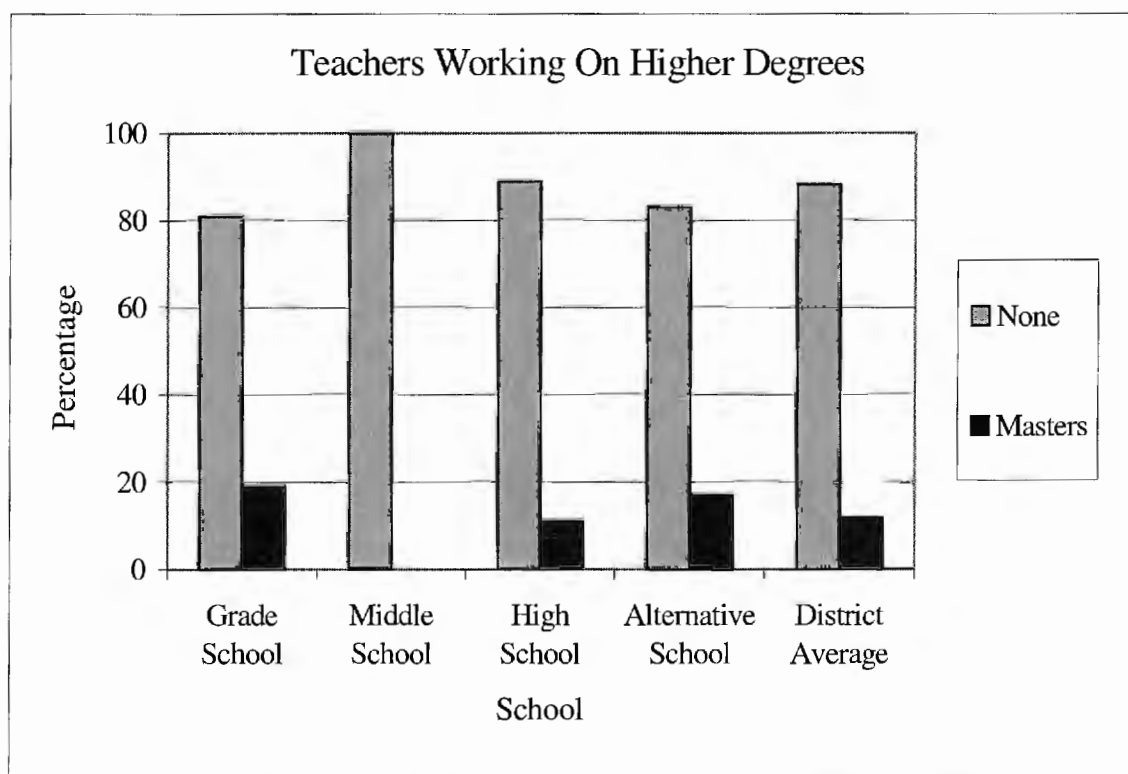


None of the coaches had received any type of sports vision training and over half were interested in learning more about sports vision.

Twelve percent of the teachers who participated in the survey were working on a Masters degree. Every respondent from the middle school was working toward a higher degree.

NUMBER	Grade School	Middle School	High School	Alternative School	District Average
None	13	8	8	5	34
Masters	3	0	1	1	5
Total	16	8	9	6	39

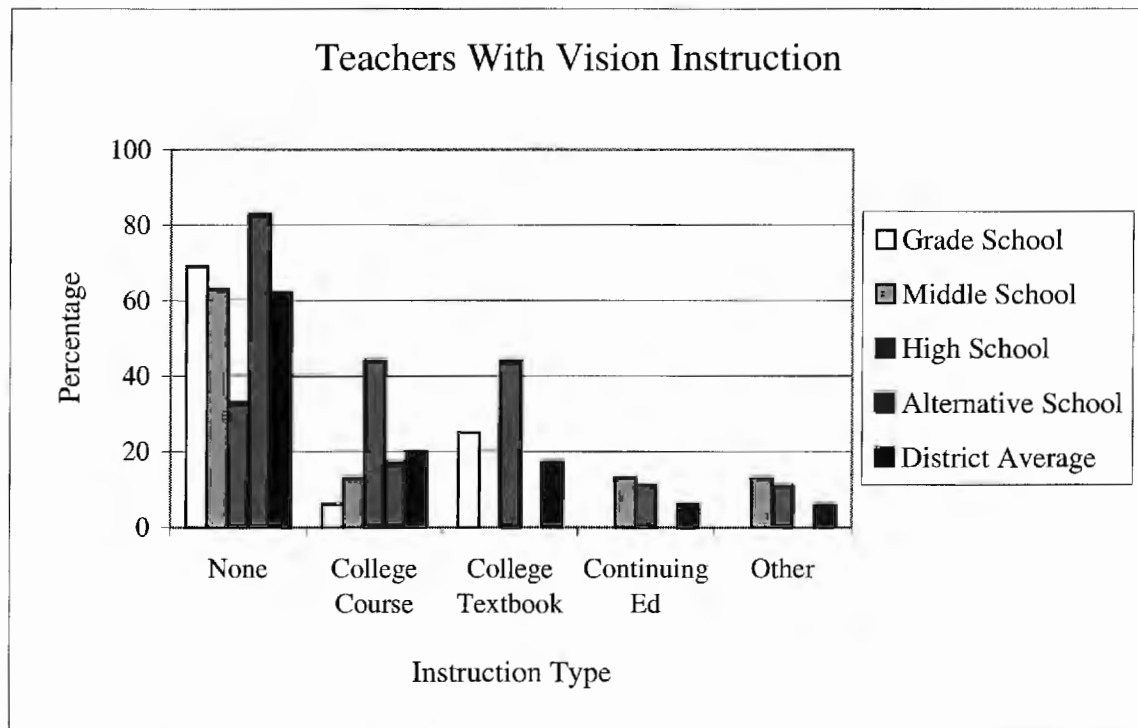
PERCENTAGE	Grade School	Middle School	High School	Alternative School	District Average
None	81	100	89	83	88
Masters	19	0	11	17	12



Sixty-two percent of the respondents had absolutely no training or instruction about vision. The other thirty-eight percent had some instruction from a college course, textbook, continuing education, or other source.

NUMBER	Grade School	Middle School	High School	Alternative School	District Average
None	11	5	3	5	24
College Course	1	1	4	1	7
College Textbook	4	0	4	0	8
Continuing Ed	0	1	1	0	2
Other	0	1	1	0	2

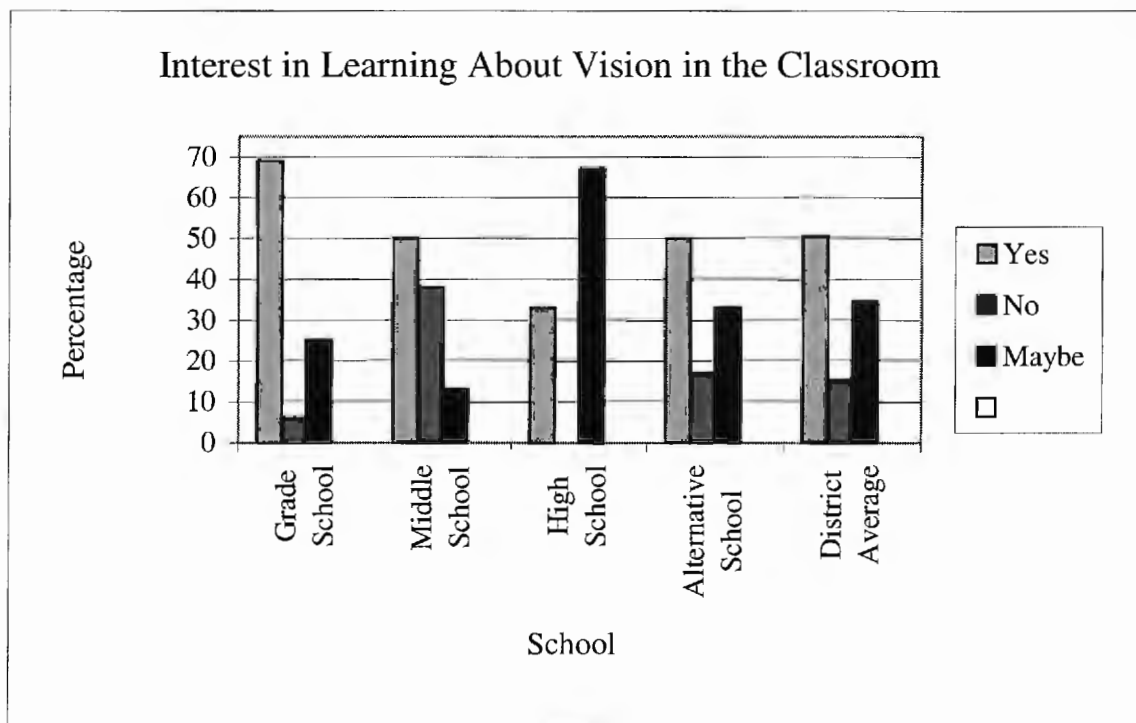
PERCENTAGE	Grade School	Middle School	High School	Alternative School	District Average
None	69	63	33	83	62
College Course	6	13	44	17	20
College Textbook	25	0	44	0	17
Continuing Ed	0	13	11	0	6
Other	0	13	11	0	6



Approximately half the respondents were interested in learning more about vision in the classroom. About one-third answered 'maybe interested', dependent on what the instruction comprised and the time involved.

NUMBER	Grade School	Middle School	High School	Alternative School	District Average
Yes	11	4	3	3	21
No	1	3	0	1	5
Maybe	4	1	6	2	13

PERCENTAGE	Grade School	Middle School	High School	Alternative School	District Average
Yes	69	50	33	50	51
No	6	38	0	17	15
Maybe	25	13	67	33	35



Vision

A glossary of terms used in the second survey can be found in Appendix B. In the first part of survey two, the teachers were asked to judge their familiarity with a number of visual terms. The terms can be broken into six categories, sight and refractive error, focusing, binocularity, eye movements, therapy, and anatomy. The respondents judged each term on a scale of one to five, one meaning they had no knowledge of the term, three meaning they were familiar with the term, and five meaning they knew and understood the term.

Few were familiar with terms from the categories, binocularity and eye movements, along with some terms from the sight and refractive error category, with all the averages below two.

	Don't Know		Familiar	Know and Understand		
	1	2	3	4	5	Average
hyperopia	29	7	2	2	1	1.5
emmetropia	36	4	0	0	1	1.2
presbyopia	32	3	3	1	2	1.5
habitual Rx	27	5	7	2	0	1.6
vergence	28	6	5	2	0	1.5
amblyopia	35	4	1	1	0	1.2
strabismus	34	5	2	0	0	1.2
pursuits	33	6	2	0	0	1.2
saccades	36	4	1	0	0	1.1

In the category of sight and refractive error, the respondents were somewhat familiar with myopia (nearsightedness), astigmatism, near and distance prescription, and vision therapy with averages between 2 and 3.2.

	Don't Know		Familiar	Know and Understand		
	1	2	3	4	5	Average
myopia	6	9	16	6	4	2.8
astigmatism	9	1	15	6	10	3.2
distance Rx	17	5	11	4	4	2.3
near Rx	18	5	11	5	2	2.2
vision therapy	10	10	16	5	0	2.4

This may easily be accounted for since myopia and astigmatism and the two most common corrected refractive errors in the pre-retirement population. Respondents were also familiar with accommodation (focusing). The average score was 2.2.

	1	2	3	4	5	Average
accommodation	19	7	6	4	5	2.2

The majority of teachers were very familiar with ocular anatomy, with a range of 3.9 to 4.0. The majority of human anatomy or biology courses cover this information and are generally part of general education in colleges.

	Don't Know		Familiar	Know and Understand		
	1	2	3	4	5	Average
cornea	1	3	12	9	16	3.9
iris	1	3	10	9	18	4.0
lens	1	2	12	8	18	4.0
retina	1	2	12	8	18	4.0

The last part of survey two contained several questions about ergonomics and the role of vision in a classroom setting. Subjects included lighting, vision safety, computer vision, ergonomics, and recognizing vision problems. The respondents showed some familiarity with these subjects. The average responses ranged from 2.3 to 3.0.

	Don't Know		Familiar	Know and Understand		
	1	2	3	4	5	Avg
vision safety in the school setting	3	11	15	8	4	3.0
ergonomics of the classroom	12	12	11	4	2	2.3
computer vision	8	8	18	4	3	2.7
recognizing vision problems of students	6	4	18	10	3	3.0

Implications

In general, the teachers surveyed had little knowledge of vision or the effects of vision problems in the classroom. This appears to be no fault of the teachers themselves, but rather an insufficiency in their education. This also implies that teachers could use more professional development or continuing education regarding vision and learning.

After reviewing several college textbooks, it is apparent that teachers receive very little vision education while obtaining their degrees.

Referencing the answers of the participants of the survey, it is also apparent that very little vision education is presented to teachers in their continuing education seminars.

Teachers are in a unique situation because they observe children involved in active learning approximately six hours a day. This puts them in a position to recognize learning problems related to vision. Obviously, teachers must be educated about vision and vision problems before they can recognize them in the classroom.

The best solution to this problem is to make vision education part of the core curriculum of each teacher. Where this cannot be done, the next best option is vision education presented in continuing education courses by an optometrist interested in education. Even supplying teachers with pamphlets distributed by optometric organizations would be better than

allowing our teachers to continue unaware of the importance of vision in their classrooms.

Conclusions

Though this is not a large-scale survey, with $n=39$ for the first survey and $n=41$ for the second, the n for both is approximately half the teachers in the Gooding School District. There are many small rural towns in Idaho and the results show a general trend for the average educator in rural Idaho.

The survey shows a definite need for teacher education with regards to vision and its effects in the classroom. Vision is a very important part of learning and many correctable problems can arise impeding a student progress through today's educational system. Teachers spend approximately six hours each day with their students, and for that reason, are in a unique position to observe students and recognize vision problems.

With the appropriate treatment, most vision problems can be corrected and a student's academic performance enhanced. For this reason, it is important that teachers are educated on the effects in the visual problems and how to recognize them. The author plans to present basic information on vision in the classroom through teacher continuing education seminars held regularly throughout the school year. With the acquired information from the surveys, a lesson can be put together to best suit the teachers of the Gooding School District and most likely those in the surrounding area.

Appendix A

Survey one and two

Two surveys used to acquire the information for this paper.

January 8, 2001

Dear Superintendent and Principals of Gooding School District:

Subject: M.Ed. Thesis Project

Following are the results of the first half of the survey of the Gooding School District. You will find a summary sheet of the district along with the results of each individual school. I appreciate all the time and effort put into this project. It has provided me with information that will assist me as I prepare to return to Gooding and become involved with the school district. The second half of the survey is also included. This second survey deals more with vision/eye terms. These are terms I would use in communicating with teachers or parents about the vision of their students/children. I would also use these terms in any continuing education or seminars that I would provide for the school. For these reasons I want to inquire about the general knowledge of the teachers in the district. I am heading back to school, so my mother will pick the surveys up between 2:00 and 2:30 on Friday, January 12th. Once again, thank you for the time and effort that you have put into this project.

Best regards,

Raymond Goodman
Optometry Graduate Student

PS I will graduate in May 2002 and at that time will be moving back to Gooding.

Quick Introduction

Hello. My name is Raymond Goodman (Class of 1993). For those of you who are new, I'm the son of Kelly and Rosemary, and the elder brother of John, Crystal, Gina, and Leisa Goodman. I am currently a third-year optometry graduate student and working on my M.Ed. As part of my thesis work I am doing a survey of the Gooding School District. I plan to work with Dr. Ryan when I graduate and settle in Gooding. I want to be involved with the schools as much as possible. The purpose of this first survey is to help me know the general characteristics of the teachers in this district, and understand the current knowledge base concerning vision. The results of the study will help me apply my expertise in a beneficial manner for Gooding's educators. Upon completion of my project, I will present the results to the district, and hope to be involved in Continuing Education Seminars and other informal groups. Thank you for all your help.

Please fill in or circle all that apply.

1. What level(s) of education do you teach?

2. Which subject(s) do you teach?

3. What college degree do you currently have?

4. Are you presently working on a higher degree? If so, which one?

5. Have you received training or instruction about vision from any of the following sources?
College course
College textbook
Continuing Ed
Other _____
6. Would you be interested in learning more about vision and its impact in the classroom?
Yes No Maybe _____

Athletic Coaches

1. Do you have any training in sports vision (visual training for improved athletic performance)?
No
Yes- Please Describe _____
2. Would you be interested in learning more about sports vision? Yes No

Feel free to write any questions or comments on the back of this sheet.

Survey 2

Hello again. First I want to thank all those that participated in the first part of this survey. This is the second half of the survey for my M.Ed. thesis project. Please fill this out and return it to your principal. All are invited to participate even if you did not complete the first survey. I am inquiring about the general knowledge you have of the eye and vision. This information I will use to direct future seminars or continuing education classes. I will also use these terms when communicating with teachers or parents about the vision and health of their students/children. Thank you for your participation and I look forward to working with you in the future.

Raymond Goodman

The following are several terms I use in optometry in explaining conditions or health of the eye and vision. Place an X on the scale from 1-5 your knowledge of these terms, 1 being you have no idea, 3 being your are familiar with the term, and 5 being you know and understand the term.

	Don't Know		Familiar		Know and Understand
	1	2	3	4	5
myopia					
hyperopia					
emmetropia					
astigmatism					
presbyopia					
habitual Rx					
distance Rx					
near Rx					
accommodation					
vergence					
amblyopia					
strabismus					
pursuits					
saccades					
vision therapy					
cornea					
iris					
lens					
retina					

	1	2	3	4	5
effects of lighting on student performance					
vision safety in the school setting					
ergonomics of the classroom					
computer vision					
recognizing vision problems of students					

Appendix B

Glossary of terms used in survey two. (References – AOA, COVD, and Webster's Dictionary websites)

Myopia – nearsightedness or myopia, as it is medically termed, is a vision condition in which near objects are seen clearly, but distant objects do not come into proper focus. Nearsightedness occurs if your eyeball is too long or the cornea has too much curvature, so the light entering your eye is not focused correctly.

Hyperopia – Farsightedness, or hyperopia, as it is medically termed, is a vision condition in which distant objects are usually seen clearly, but close ones do not come into proper focus. Farsightedness occurs if your eyeball is too short or the cornea has too little curvature, so light entering your eye is not focused correctly.

Emmetropia – is the lack of refractive error

Astigmatism – is a vision condition that occurs when the front surface of your eye, the cornea, is slightly irregular in shape. This irregular shape prevents light from focusing properly on the back of your eye, the retina. As a result, your vision may be blurred at all distances.

Presbyopia – is a vision condition in which the crystalline lens of your eye loses its flexibility, which makes it difficult for you to focus on close objects.

Habitual Rx – spectacle correction used most often

Distance Rx – spectacle correction used to see clearly in the distance

Near Rx – spectacle correction used to see clearly at near

Accommodation – focusing, the crystalline lens changes shape in order to focus near objects, this ability is lost with presbyopia

Vergence – eye movements in which the eye move closer together or farther apart

Amblyopia – is the loss or lack of development of central vision in one eye that is unrelated to any eye health problem and is not correctable with lenses. It can result from a failure to use both eyes together. Lazy eye is often associated with crossed-eyes or a large difference in the degree of nearsightedness or farsightedness between the two eyes. It usually develops before age six and it does not affect side vision.

Strabismus – occurs when one or both of your eyes turns in, out, up or down. Poor eye muscle control usually causes crossed-eyes. This misalignment often first appears before age 21 months but may develop as late as age six. This is one reason why the American Optometric Association recommends a comprehensive optometric examination before six months and again at age three.

Pursuits – eye movement in which the eye follows a slow, smooth moving target

Saccades – eye movements in which the eye jumps from one target to another

Vision therapy – a programmed combination of office treatment and home therapy. Lenses, prisms, optical devices, and specially adapted computers are some of the devices through which one learns to use vision more effectively.

Cornea – the transparent part of the coat of the eyeball that covers the iris and pupil and admits light to the interior

Iris – the opaque contractile diaphragm perforated by the pupil and forming the colored portion of the eye

Lens – a highly transparent biconvex lens-shaped or nearly spherical body in the eye that focuses light rays (as upon the retina)

Retina – the sensory membrane that lines the eye, is composed of several layers including one containing the rods and cones, and functions as the immediate instrument of vision by receiving the image formed by the lens and converting it into chemical and nervous signals which reach the brain by way of the optic nerve

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